

Cleaner Air Starts with Cleaner Trucks.

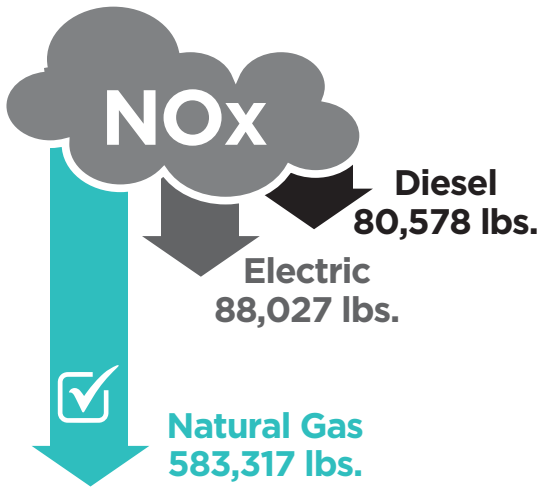
From the largest refuse company in the United States to some of the smallest independent operators, refuse companies are increasingly investing in natural gas vehicles.



Natural Gas Refuse Trucks are Road-Tested & Ready to Deploy

Roughly **60%** of new refuse trucks on order are NGVs.

Lifetime Pounds of NOx Reduced



The VW Settlement's Environmental Mitigation Trust (EMT) Fund provides millions in funding for states to replace older diesel vehicles with new cleaner trucks and buses that reduce NOx emissions. For private refuse fleets, funds may be used to offset 25 percent of each new natural gas collection and recycling vehicle. For government fleets, state authorities may fund up to 100 percent of the cost for new trucks.

Vehicle Type	Technology Cost	NOx Reduced	Cost per lb. of NOx
Natural Gas	\$300,000	4,375 lbs	\$69
Diesel	\$270,000	544 lbs	\$151
Electric	\$670,000	4,423 lbs	\$496

Figures above represent the lifetime emission reduction benefits of using \$10 million to replace older diesel vehicles with new, cleaner trucks. For purposes of the calculations here, it is assumed that VW Settlement Funds are used to offset 25% of the the cost of each new natural gas and diesel refuse truck and 75% of the cost of a new electric refuse truck, as allowed by the Trust.

Natural Gas Achieves the Most Cost-Effective NOx Emissions Reductions

When comparing the cost of NOx reduction, natural gas refuse trucks are **86 percent** more cost effective than diesel alternatives and **54 percent** more cost effective than electric options.

**Emission comparisons are based on results using Argonne National Laboratory's HDVEC tool (<https://afleet-web.ex.anl.gov/hdv-emissions-calculator/>) and include modeling of new low-NOx natural gas engines and the diesel in-use emission option.*



Find out more about championing reduced truck emissions in your community at www.ngvamerica.org.

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Natural Gas Vehicles for America

Natural Gas Refuse Truck Fleet Success Stories



Waste Management: WM has the largest private vocational heavy-duty fleet of natural gas vehicles in North America with more than 7,100 natural gas recycling and waste collection trucks in operation. To fuel its fleet, WM has fueling capacities at 118 sites and operates 25 public fueling stations. This year, WM fueled 25 percent of its natural gas fleet with renewable natural gas produced from landfill biogas. For every diesel truck it replaces with natural gas, WM reduces its diesel fuel use by an average of 8,000 gallons per year and slashes its greenhouse gas emissions by 14 metric tons annually.



DeKalb County, GA: DeKalb County Department of Sanitation, which serves more than 170,000 customers, operates 120 CNG refuse trucks fueled 100 percent with renewable natural gas produced from its Seminole Landfill and dispensed at two CNG fueling stations. By using natural gas vehicles throughout its operations, the Department has reduced its diesel usage by 50 percent and has plans to make CNG its primary fuel for all Solid Waste Operations vehicles within the next several years.



Lower Fuel and Maintenance Costs

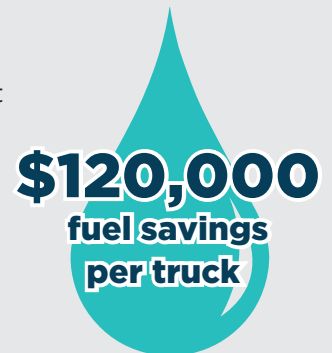
Natural gas refuse trucks are easier to maintain than diesel counterparts:

- No diesel particulate matter filter regeneration or waste
- No selective catalytic reduction
- No diesel emissions fluid

Clearing the Air Doesn't Have to Break the Bank

Natural gas trucks offer a fast return-on-investment (ROI) due to low fuel and maintenance costs.

With today's oil prices, natural gas prices can be \$.75 to \$1.50 or more lower than diesel at the pump. This price differential quickly translates into substantial fuel savings for refuse trucks, which typically consume around 8,000 diesel gallon equivalents (DGEs) and log 23,400 miles per year, and have tough-duty cycles, low miles per gallon, and high engine hours.



(for anticipated 15 year vehicle life)

Calculate Natural Gas Emissions Benefits Yourself

Compare emissions of commercially-available alternative fuel medium- and heavy-duty vehicles with the Heavy-Duty Vehicle Emissions Calculator (HDVEC) tool.

resource aids school bus fleet managers and decision makers in comparing vehicle emission reduction options to assist in maximizing their new vehicle funding investment.

Developed by the U.S. Department of Energy's Argonne National Laboratory using its AFLEET Tool 2017, this online

Accessible online at:
<http://afleet-web.es.anl.gov/hdv-emissions-calculator/>
 or <http://www.ngvamerica.org/vwactioncenter/>.



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